

AEROLOGICAL OBSERVATIONS

(Aerological Division, D. M. LITTLE, in charge)

By L. T. SAMUELS

At those stations with a sufficient period of record for the determination of approximate normals, upper-air temperatures during October averaged above normal at the eastern and central stations, and below normal along the Pacific coast (see table 1 and footnote thereon). Little weight can be given the departures, however, at Boston, Seattle, and Sunnyvale, where observations were made on only 11 days at the former station, and 8 days at the latter 2 stations. Airplane observations were discontinued at Sunnyvale on October 10, incident to the removal of Navy activities from that place. Upper-air relative humidity departures were small.

In practically all cases, the directions of the upper-air resultant winds for October were close to normal. Marked differences in both the normals and resultants on the Pacific coast, where a marked southerly component is found in the northern section and a northerly component in the southern section. Above 2,000 meters, the direction shifts to westerly along the entire coast. Resultant velocities were below normal in the eastern and northern sections, and generally above normal elsewhere.

TABLE 1.—Mean free-air temperatures and relative humidities obtained by airplanes during October 1935

TEMPERATURE (° C.)																			
Stations	Altitude (meters) m. s. l.																		Number of observations
	Surface		500		1,000		1,500		2,000		2,500		3,000		4,000		5,000		
	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	
Barksdale Field (Shreveport), La. ¹ (52 m)	15.8	-----	18.8	-----	17.3	-----	14.9	-----	12.2	-----	9.7	-----	6.9	-----	1.6	-----	-4.1	-----	30
Billings, Mont. ² (1088 m)	5.7	-----		-----		-----	8.2	-----	6.0	-----	3.1	-----	0.0	-----	-7.3	-----	-14.1	-----	30
Boston, Mass. ¹ (5 m)	9.2	-1.1	10.3	+1.4	8.6	+1.6	7.4	+1.7	6.2	+2.0	4.2	+1.9	1.5	+1.3	-4.1	+0.9	-11.5	-0.3	11
Cheyenne, Wyo. ³ (1,873 m)	3.2	-----		-----		-----		-----	5.4	-----	6.6	-----	3.7	-----	-3.7	-----	-11.0	-----	31
El Paso, Tex. ² (1,194 m)	14.5	-----		-----		-----	17.9	-----	16.6	-----	14.1	-----	10.8	-----	3.7	-----	-3.1	-----	30
Fargo, N. Dak. ² (274 m)	3.6	-----	6.8	-----	6.2	-----	4.4	-----	2.7	-----	0.5	-----	-1.8	-----	-6.9	-----	-12.7	-----	31
Kelly Field (San Antonio), Tex. ¹ (206 m)	18.7	-----	20.4	-----	19.6	-----	16.6	-----	14.2	-----	11.4	-----	8.5	-----	2.5	-----	-4.9	-----	23
Lakehurst, N. J. ³ (39 m)	9.5	-----	10.9	-----	9.2	-----	8.1	-----	6.3	-----	4.1	-----	1.8	-----	-2.6	-----	-7.8	-----	30
Maxwell Field (Montgomery), Ala. ¹ (52 m)	15.2	-----	18.1	-----	15.8	-----	13.1	-----	10.9	-----	8.8	-----	6.1	-----	-0.7	-----	-8.1	-----	31
Mitchel Field (Hempstead, Long Island) N. Y. ¹ (29 m)	8.8	-----	9.4	-----	7.4	-----	6.0	-----	3.9	-----	1.2	-----	-1.0	-----	-6.4	-----	-13.2	-----	30
Murfreesboro, Tenn. ³ (174 m)	12.1	-----	14.7	-----	12.5	-----	10.2	-----	7.4	-----	5.1	-----	2.2	-----	-3.5	-----	-9.4	-----	31
Norfolk, Va. ³ (10 m)	13.6	-0.6	14.4	+0.7	12.3	+1.0	10.6	+1.0	9.1	+1.4	7.5	+1.9	5.3	+1.9	0.2	+1.7	-6.2	+1.2	27
Oklahoma City, Okla. ³ (391 m)	13.9	-----	14.7	-----	15.7	-----	14.3	-----	12.1	-----	9.5	-----	6.7	-----	0.2	-----	-6.3	-----	31
Omaha, Nebr. ³ (300 m)	7.7	-0.8	8.8	-1.1	9.1	-2.2	8.3	-1.6	7.5	-0.6	5.6	-0.3	2.8	-0.3	-3.0	-0.1	-8.9	+0.4	31
Pearl Harbor, Territory of Hawaii ³ (6 m)		-----		-----		-----		-----		-----		-----		-----		-----		-----	
Pensacola, Fla. ³ (24 m)	18.2	+0.1	18.8	+0.9	16.2	+0.4	13.3	-0.3	11.4	-0.2	8.9	-0.4	6.2	-0.7	1.1	-0.5	-4.8	-0.4	31
San Diego, Calif. ³ (10 m)	13.3	-4.2	15.0	-2.2	15.3	-2.3	13.7	-2.2	11.4	-2.5	9.1	-2.2	6.2	-2.2	0.6	-1.6	-6.4	-2.2	29
Scott Field (Belleville), Ill. ¹ (135 m)	7.6	-----	10.9	-----	9.8	-----	7.7	-----	6.4	-----	6.0	-----	3.8	-----	-1.0	-----	-6.5	-----	15
Seattle, Wash. ³ (25 m)	6.8	-5.5	5.6	-5.7	3.4	-6.3	1.2	-6.5	-1.4	-7.1	-4.0	-7.3	-6.3	-7.3	-11.6	-7.0	-18.0	-6.7	8
Selfridge Field (Mount Clemens), Mich. ¹ (177 m)	7.3	-----	10.4	-----	8.6	-----	6.7	-----	4.7	-----	2.5	-----	-0.1	-----	-5.2	-----	-11.1	-----	31
Spokane, Wash. ³ (596 m)	4.7	-----		-----	7.5	-----	6.6	-----	4.3	-----	2.0	-----	-0.7	-----	-7.2	-----	-14.2	-----	30
Sunnyvale, Calif. ³ (10 m)	15.3	-1.4	14.2	-0.7	16.5	-0.1	15.4	-0.4	12.5	-1.2	9.4	-1.2	6.0	-0.9	0.1	+0.6	-6.1	+1.6	8
Washington, D. C. ³ (13 m)	11.0	-1.1	12.3	+0.5	10.2	+0.3	8.6	+0.6	6.6	+0.6	4.5	+0.4	2.1	0.0	-2.3	+0.3	-7.7	+0.4	30
Wright Field (Dayton), Ohio ¹ (244 m)	7.0	-----	10.7	-----	9.7	-----	7.6	-----	5.7	-----	3.6	-----	1.6	-----	-3.1	-----	-8.9	-----	29

RELATIVE HUMIDITY (PERCENT)																			
Barksdale Field (Shreveport), La.	82	-----	62	-----	60	-----	60	-----	60	-----	52	-----	52	-----	48	-----	42	-----	
Billings, Mont.	59	-----		-----		-----	50	-----	48	-----	49	-----	50	-----	54	-----	53	-----	
Boston, Mass.	72	-2	66	-3	58	-7	54	-5	58	+3	51	0	47	+1	48	+6	52	+9	
Cheyenne, Wyo.	63	-----		-----		-----		-----	60	-----	53	-----	50	-----	50	-----	52	-----	
El Paso, Tex.	57	-----		-----		-----	42	-----	37	-----	35	-----	34	-----	38	-----	30	-----	
Fargo, N. Dak.	70	-----	63	-----	58	-----	55	-----	50	-----	46	-----	43	-----	47	-----	44	-----	
Kelly Field (San Antonio), Tex.	95	-----	83	-----	69	-----	67	-----	55	-----	45	-----	38	-----	28	-----	27	-----	
Lakehurst, N. J.	85	-----	71	-----	66	-----	57	-----	52	-----	50	-----	48	-----	46	-----	39	-----	
Maxwell Field (Montgomery), Ala.	81	-----	61	-----	63	-----	66	-----	64	-----	55	-----	49	-----	44	-----	40	-----	
Mitchel Field (Hempstead, L. I.), N. Y.	85	-----	72	-----	65	-----	56	-----	50	-----	50	-----	50	-----	45	-----	55	-----	
Murfreesboro, Tenn.	77	-----	55	-----	53	-----	54	-----	52	-----	50	-----	51	-----	49	-----	43	-----	
Norfolk, Va.	80	+3	66	-1	63	0	52	-4	46	-4	43	-2	40	0	33	+1	29	+1	
Oklahoma City, Okla.	84	-----	80	-----	68	-----	61	-----	61	-----	54	-----	48	-----	49	-----	45	-----	
Omaha, Nebr.	83	+2	74	+2	63	+6	56	+3	46	-2	41	-4	42	-4	43	-1	39	-3	
Pearl Harbor, Territory of Hawaii		-----		-----		-----		-----		-----		-----		-----		-----		-----	
Pensacola, Fla.	81	+2	74	+3	72	+4	68	+5	54	-2	49	-2	43	-3	32	-7	30	-6	
San Diego, Calif.	82	+9	71	+5	50	+2	38	-2	30	-3	26	-4	23	-4	20	-5	16	-6	
Scott Field (Belleville), Ill.	85	-----	60	-----	53	-----	53	-----	47	-----	41	-----	47	-----	43	-----	43	-----	
Seattle, Wash.	80	-1	78	+3	77	+7	73	+8	72	+12	68	+11	67	+15	66	+16	75	+22	
Selfridge Field (Mount Clemens), Mich.	82	-----	66	-----	64	-----	56	-----	53	-----	50	-----	47	-----	43	-----	40	-----	
Spokane, Wash.	78	-----		-----	65	-----	61	-----	59	-----	56	-----	54	-----	53	-----	53	-----	
Sunnyvale, Calif.	88	+15	86	+13	66	+13	58	+19	55	+22	53	+23	47	+24	42	+18	36	+14	
Washington, D. C.	82	+7	65	+1	63	+2	51	-6	47	-6	49	+1	49	+5	43	+7	35	+6	
Wright Field (Dayton), Ohio	87	-----	69	-----	63	-----	57	-----	48	-----	49	-----	44	-----	40	-----	39	-----	

RELATIVE HUMIDITY (PERCENT)

Barksdale Field (Shreveport), La.	82	---	62	---	60	---	60	---	60	---	52	---	52	---	48	---	42	---
Billings, Mont.	59	---	---	---	---	---	50	---	48	---	49	---	50	---	54	---	53	---
Boston, Mass.	72	-2	66	-3	58	-7	54	-5	58	+3	51	0	47	+1	48	+6	52	+9
Cheyenne, Wyo.	63	---	---	---	---	---	---	---	60	---	53	---	50	---	50	---	52	---
El Paso, Tex.	57	---	---	---	---	---	42	---	37	---	35	---	34	---	38	---	30	---
Fargo, N. Dak.	70	---	63	---	58	---	55	---	50	---	46	---	43	---	47	---	44	---
Kelly Field (San Antonio), Tex.	95	---	83	---	69	---	67	---	55	---	45	---	38	---	28	---	27	---
Lakehurst, N. J.	85	---	71	---	66	---	57	---	52	---	50	---	48	---	46	---	39	---
Maxwell Field (Montgomery), Ala.	81	---	61	---	63	---	66	---	64	---	55	---	49	---	44	---	40	---
Mitchel Field (Hempstead, L. I.), N. Y.	85	---	72	---	65	---	56	---	50	---	50	---	50	---	45	---	55	---
Murfreesboro, Tenn.	77	---	55	---	53	---	54	---	52	---	50	---	51	---	49	---	43	---
Norfolk, Va.	80	+3	66	-1	63	0	52	-4	46	-4	43	-2	40	0	33	+1	29	+1
Oklahoma City, Okla.	84	---	80	---	68	---	61	---	61	---	54	---	48	---	49	---	45	---
Omaha, Nebr.	83	+2	74	+2	63	+6	56	+3	46	-2	41	-4	42	-4	43	-1	39	-3
Pearl Harbor, Territory of Hawaii	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Pensacola, Fla.	81	+2	74	+3	72	+4	68	+5	54	-2	49	-2	43	-3	32	-7	30	-6
San Diego, Calif.	82	+9	71	+5	50	+2	38	-2	30	-3	26	-4	23	-4	20	-5	16	-6
Scott Field (Belleville), Ill.	85	---	60	---	57	---	53	---	47	---	41	---	47	---	43	---	43	---
Seattle, Wash.	80	-1	78	+3	77	+7	73	+8	72	+12	68	+11	67	+15	66	+16	75	+22
Selfridge Field (Mount Clemens), Mich.	82	---	66	---	64	---	56	---	53	---	50	---	47	---	43	---	40	---
Spokane, Wash.	78	---	---	---	65	---	61	---	59	---	56	---	54	---	53	---	53	---
Sunnyvale, Calif.	88	+15	86	+13	66	+13	58	+19	55	+22	53	+23	52	+24	42	+18	36	+14
Washington, D. C.	82	+7	65	+1	63	+2	51	-6	47	-6	49	+1	49	+5	43	+7	35	+6
Wright Field (Dayton), Ohio	87	---	69	---	63	---	57	---	48	---	49	---	44	---	40	---	39	---

¹ Army.² Weather Bureau.³ Navy.

Observations taken about 4 a. m., 75th meridian time, except along the Pacific coast and Hawaii where they are taken at dawn.

NOTE.—The departures are based on "normals" covering the following total number of observations made during the same month in previous years, including the current month: Boston, 90; Norfolk, 147; Omaha, 155; Pensacola, 178; San Diego, 167; Seattle, 41; Sunnyvale, 61; Washington, 220.

TABLE 2.—Free-air resultant winds (meters per second) based on pilot-balloon observations made near 5 a. m. (E. S. T.) during October 1935

[Wind from N=360°, E=90°, etc.]

Altitude (m) m. s. l.	Albuquerque, N. Mex. (1,554 m)		Atlanta, Ga. (309 m)		Billings, Mont. (1,088 m)		Boston, Mass. (15 m)		Cheyenne, Wyo. (1,873 m)		Chicago, Ill. (192 m)		Cincinnati, Ohio (153 m)		Detroit, Mich. (204 m)		Fargo, N. Dak. (274 m)		Houston, Tex. (21 m)		Key West, Fla. (11 m)		Medford, Oreg. (410 m)		Murfrees- boro, Tenn. (180 m)	
	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity
Surface.....	°	0.7	21	0.9	267	2.3	296	1.4	289	3.4	248	1.1	68	0.6	245	2.0	265	1.0	50	1.7	60	3.9	180	0.7	165	0.1
500.....	18	0.7	102	2.5	281	6.0	281	6.0	238	5.0	212	2.5	254	5.1	243	3.6	147	4.6	70	9.1	198	0.7	177	3.1	177	3.1
1,000.....	118	2.7	118	2.7	290	6.3	290	6.3	255	5.7	261	4.9	268	6.6	258	4.8	162	3.1	84	8.6	196	1.1	206	3.6	206	3.6
1,500.....	209	1.7	209	1.7	259	5.0	289	8.4	264	6.7	268	6.8	273	7.4	279	5.3	194	2.1	82	7.3	161	2.0	235	4.3	235	4.3
2,000.....	250	2.7	252	1.2	283	4.5	282	9.2	281	4.7	265	7.8	262	8.0	271	8.0	292	7.6	221	1.0	80	5.2	238	0.9	258	3.7
2,500.....	257	4.9	261	1.3	288	5.9	277	8.8	278	5.9	269	7.2	274	9.6	275	7.7	301	8.4	263	1.5	74	4.3	48	0.2	270	4.3
3,000.....	260	6.6	279	2.5	291	7.3	278	9.6	283	10.1	283	10.1	284	7.6	278	9.4	292	9.7	272	1.5	88	2.5	309	1.1	282	4.3
4,000.....	264	10.2	276	4.7	292	6.9	275	6.1	275	6.1	339	8.0	303	7.8	275	7.8	292	9.7	285	2.6	336	3.6	298	2.6	298	2.6
5,000.....	270	11.0	276	4.7	284	5.9	268	6.1	268	6.1	339	8.0	303	7.8	275	7.8	292	9.7	285	2.6	336	3.6	298	2.6	298	2.6

Altitude (m) m. s. l.	Newark, N. J. (14 m)		Oakland, Calif. (8 m)		Oklahoma City, Okla. (402 m)		Omaha, Nebr. (306 m)		Pearl Har- bor, Terri- tory of Hawaii ¹ (68 m)		Pensacola, Fla. ¹ (24 m)		St. Louis, Mo. (170 m)		Salt Lake City, Utah (1,294 m)		San Diego, Calif. (15 m)		Sault Ste. Marie, Mich. (198 m)		Seattle, Wash. (14 m)		Spokane, Wash. (603 m)		Washing- ton, D. C. (10 m)	
	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity
Surface.....	°	1.3	36	0.8	143	2.6	149	1.7	13	1.9	52	3.9	180	0.8	151	3.3	70	1.5	104	0.8	164	0.7	82	1.9	325	0.9
500.....	295	5.3	353	2.1	174	7.3	204	3.1	71	2.3	102	5.6	193	3.9	229	2.6	229	2.6	214	2.4	214	2.4	198	2.6	288	2.7
1,000.....	295	5.6	344	2.8	202	12.2	233	4.9	64	1.5	128	2.6	247	5.3	357	1.3	357	1.3	259	2.5	205	2.5	198	2.6	294	4.3
1,500.....	288	7.8	340	2.9	225	9.6	260	6.0	357	0.5	147	1.7	259	5.6	158	4.5	354	1.3	275	7.1	220	4.1	232	3.9	291	4.9
2,000.....	286	7.4	333	2.3	247	8.7	294	6.3	254	1.0	49	0.9	270	7.2	195	4.0	358	1.6	293	7.3	238	4.5	262	4.4	286	5.6
2,500.....	300	6.2	334	3.1	262	7.9	309	7.2	279	0.6	21	1.9	285	9.2	228	3.2	368	2.0	286	7.8	254	6.2	273	5.1	275	6.2
3,000.....	325	2.1	325	2.1	281	6.1	291	8.3	252	1.2	7	1.7	293	11.4	259	3.1	314	2.4	280	4.6	268	8.4	277	6.6	278	8.2
4,000.....	325	2.1	325	2.1	286	5.6	293	8.5	321	2.9	321	2.9	298	9.7	279	4.0	297	5.5	294	4.3	268	8.4	277	6.6	278	8.2
5,000.....	325	2.1	325	2.1	286	5.6	293	8.5	321	2.9	321	2.9	298	9.7	279	4.0	297	5.5	294	4.3	268	8.4	277	6.6	278	8.2

¹ Navy stations.

RIVERS AND FLOODS

[River and Flood Division, MONTROSE W. HAYES, in charge]

By RICHMOND T. ZOCH

Except for a flood in the Chenango River in New York, there were no floods in the United States during October 1935; the damage from this flood was about \$90,000.

Table of flood stages in October 1935

[All dates in October]

River and station	Flood stage	Above flood stages— dates		Crest	
		From—	To—	Stage	Date
ATLANTIC SLOPE DRAINAGE					
Chenango: Sherburne, N. Y -----	<i>Feet</i> 8	31	31	<i>Feet</i> 9.7	31

WEATHER OF THE ATLANTIC AND PACIFIC OCEANS

[The Marine Division, W. F. McDONALD in charge]

NORTH ATLANTIC OCEAN, OCTOBER 1935

By H. C. HUNTER

Atmospheric pressure.—The mean pressure was somewhat above normal over most of the North Atlantic area, notably near the Azores, where at Horta it averaged almost a quarter inch higher than normal. The north-eastern portion, however, had pressure lower than normal; Lerwick, in the Shetland Islands, reported one-third of an inch below. There were also very small deficiencies at Bermuda and Turks Island.

The highest barometer reading so far reported from the open North Atlantic was 30.76 inches, on the American steamship *Afoundria*, near 43° N., 21° W., during the forenoon of the 28th. On the 30th the station on Belle Isle noted 30.80 inches; and a vessel in the Gulf of St. Lawrence, 30.83 inches. The lowest reading was 28.03 inches, on the Danish motorship *Oregon*, the afternoon of the 18th, near 60° N., 20° W. No vessel within the influence of any of this month's storms of tropical origin has reported a reading below 28.70 inches.